

Harvard Summer Program Immunology Project Resource Information Form	
Title	Immunology Jeopardy and Ideas/Reviews of Websites for Free Videos and Animations
Resource Type	<input type="checkbox"/> Lesson Plan <input checked="" type="checkbox"/> Activity <input type="checkbox"/> Lab Activity <input type="checkbox"/> Web-quest
Description	This resource has two parts. The first part consists of two immunology “Jeopardy” games. One is for biology students who are taking an introductory high school course and the second is a similar game for advanced or AP students. The second part is a list of web sites that will provide a teacher with short animations and videos that will enhance teaching and allow students to explore on their own.
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Author Institution(s)	Brooks School
Objective	The objectives are twofold. First, to provide teachers and students with a simple review activity (the Jeopardy Game). Second, to provide teachers and students with some resources from the web to enhance both teaching and learning.
Key Concepts	Immunology and Infectious Diseases
Student Prep	Students should have completed their studies of immunology , infectious disease, and AIDS.
Materials	Computer with powerpoint. For “Jeopardy” to be played in a classroom setting, it is best to have an LCD projector or a large monitor.
Grade level(s)	Grades 9-12
Teacher Prep Time	None to use these tools. The assumption is that a teacher has already covered immunology basics.
Class Time	The “Jeopardy” Game will take about 15 minutes. The videos/animations vary in their length of time, however most are around 3 minutes. It will be up to the teacher to choose what works best for him or her.
National Standards	<ul style="list-style-type: none"> Cells can differentiate, and complex multicellular organisms are formed as a highly organized arrangement of differentiated cells. In the development of these multicellular organisms, the progeny from a single cell form an embryo in which the cells multiply and differentiate to form the many specialized cells, tissues and organs that comprise the final organism. This differentiation is regulated

	<p>through the expression of different genes.</p> <ul style="list-style-type: none"> • Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms. Only mutations in germ cells can create the variation that changes an organism's offspring. • Species evolve over time. Evolution is the consequence of the interactions of (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring.
<p>State Standards</p>	<p>From the State of Massachusetts Standards (boldface standards are required, others are optional):</p> <p>2.2 Differentiate between prokaryotic cells and eukaryotic cells, in terms of their general structures and degrees of complexity.</p> <p>3.4 Explain how mutations in the DNA sequence of a gene may be silent or result in phenotypic change in an organism and in its offspring.</p> <p>3.9 Recognize that while viruses lack cellular structure, they have the genetic material to invade living cells.</p> <p>4.1 Explain how major organ systems in humans (e.g., kidney, muscle, lung) have functional units (e.g., nephron, sarcome, alveoli) with specific anatomy that perform the function of that organ system.</p>
<p>Sources</p>	<p><If the resource is derived or adapted from previously published material, cite the source(s) here.></p> <p>For the development of the Jeopardy Game, I used the website http://www.aiken.k12.sc.us/site1/staff_development/site/ajeap.htm. This site gave me the format for the game. The questions were produced by me. Sources for videos, animations, and games are indicated on the project sheet.</p>
<p>References</p>	<p><u>Biology</u>, 6th Ed., Campbell and Reece, Benjamin Cummings, Pearson Education, 2002 ISBN 0-8053-6624-5 Modern Biology, Holt, Rinehart and Winston, 2002 ISBN: 0030565413</p>
<p>Assessment</p>	<p>None</p>

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